

We claim:

1. An implantable medical device having a controlled release coating comprising:

a terpolymer-bipolymer blend having a total solubility parameter (δ_T) approximately equal to a bioactive agent's solubility parameter (δ) and wherein δ_T and δ is between $15 \text{ J}^{1/2}/\text{cm}^{3/2}$ to $25 \text{ J}^{1/2}/\text{cm}^{3/2}$.

2. The controlled release coating according to claim 1 wherein said coating has a glass transition point (T_g) between approximately -20°C and 50°C .

3. The controlled release coating according to claim 1 wherein said terpolymer comprises relative weight percent concentrations of monomer subunits consisting essentially of vinyl acetate (VAc), alkyl methacrylate (AMA) and n-vinyl pyrrolidone (NVP) and said bipolymer comprises relative weight percent concentrations of monomer subunits consisting essentially of VAc and AMA.

4. The controlled release coating according to claim 3 wherein said relative weight percent concentrations of said monomer subunits in said terpolymer comprises from 7-30% (VAc), 40-75% (AMA) and 19-30% (NVP).

5. The controlled release coating according to claim 3 wherein said relative weight percent concentrations of said monomer subunits in said bipolymer comprises from 5-70% VAc and from 30-95% AMA.

6. The controlled release coating according to claim 3 wherein said alkyl methacrylate is selected from the group consisting of methyl, ethyl, propyl, butyl, pentyl, and hexyl.

7. The controlled release coating according to any one of claims 1 through 6 wherein said δ_T is approximately 15 to 21 and said polymer blend comprises from 25% to 80% bipolymer and from 20% to 75% terpolymer.

8. The controlled release coating according to any one of claims 1-6 wherein said bipolymer has a lower T_g than said terpolymer.

9. The controlled release coating according to claim 1 wherein said bioactive agent is selected from the group consisting of anti-proliferatives including, but not limited to, macrolide antibiotics including FKBP 12 binding compounds, estrogens, chaperone inhibitors, protease inhibitors, protein-tyrosine kinase inhibitors, peroxisome proliferator-activated receptor gamma ligands (PPAR γ), hypothemycin, nitric oxide, bisphosphonates, epidermal growth factor inhibitors,

antibodies, antibiotics, proteasome inhibitors anti-sense nucleotides and transforming nucleic acids.

10. The controlled release coating according to claim 9 wherein said antiproliferative is a FKBP 12 binding compound.

11. The controlled release coating according to claim 10 wherein said FKBP 12 binding compound is a macrolide antibiotic.

12. The controlled release coating according to claim 11 wherein said macrolide antibiotic is rapamycin, evrolimus or ABT-578.

13. A vascular stent comprising a structure:
said structure comprising a material having a hydrophobic polymer disposed thereon; and

a controlled release coating over said hydrophobic polymer wherein said controlled release coating comprises a bioactive agent-containing terpolymer-bipolymer blend wherein the difference between the solubility parameters of said terpolymer-bipolymer blend and said bioactive agent is no greater than $10 \text{ J}^{1/2}/\text{cm}^{3/2}$ and the total solubility parameter (δ_T) of said bioactive agent-containing terpolymer-bipolymer blend is no greater than $25 \text{ J}^{1/2}/\text{cm}^{3/2}$.

14. The vascular stent according to claim 13 wherein said hydrophobic polymer is parylene or a parylene derivative.

15. The vascular stent according to claim 13 wherein said terpolymer comprises relative weight percent concentrations of monomer subunits consisting essentially of vinyl acetate (VAc), alkyl methacrylate (AMA) and n-vinyl pyrrolidone (NVP) and said bipolymer comprises relative weight percent concentrations of monomer subunits consisting essentially of VAc and AMA.

16. The vascular stent according to claim 15 wherein said relative weight percent concentrations of said monomer subunits in said terpolymer comprises from 7-30% (VAc), 40-75% (AMA) and 19-30% (NVP).

17. The vascular stent according to claim 13 wherein said relative weight percent concentrations of said monomer subunits in said bipolymer comprises from 5-70% VAc and from 30-95% AMA.

18. The vascular stent according to claim 15 wherein said alkyl methacrylate is selected from the group consisting of methyl, ethyl, propyl, butyl, pentyl, and hexyl.

19. The vascular stent according to any one of claims 13 through 18 wherein said δT is approximately 15 to 21 and said polymer blend comprises from 25% to 80% bipolymer and from 20% to 75% terpolymer.

20. The vascular stent according to any one of claims 13-18 wherein said bipolymer has a lower T_g than said terpolymer.

21. The vascular stent according to claim 13 wherein said bioactive agent is selected from the group consisting of anti-proliferatives including, but not limited to, macrolide antibiotics including FKBP 12 binding compounds, estrogens, chaperone inhibitors, protease inhibitors, protein-tyrosine kinase inhibitors, peroxisome proliferator-activated receptor gamma ligands (PPAR γ), hypothemycin, nitric oxide, bisphosphonates, epidermal growth factor inhibitors, antibodies, antibiotics, proteasome inhibitors anti-sense nucleotides and transforming nucleic acids.

22. The vascular stent according to claim 21 wherein said antiproliferative is a FKBP 12 binding compound.

23. The vascular stent according to claim 22 wherein said FKBP 12 binding compound is a macrolide antibiotic.

24. The vascular stent according to claim 23 wherein said macrolide antibiotic is rapamycin, evrolimus or ABT-578.